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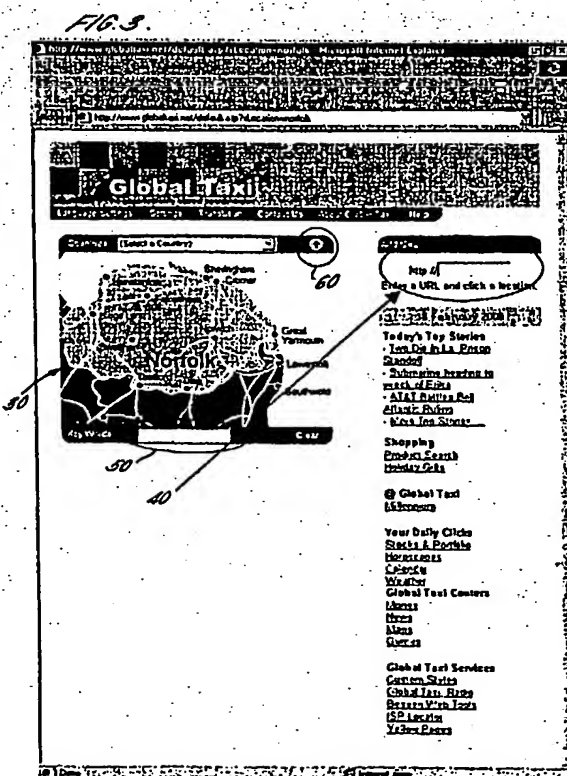
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G4A AUDB

(56) Documents Cited
EP 1045345 A1   WO 01/65410 A2
WO 00/41090 A1   US 5032989 A
http://uk.yell.com/yell/searchtp.html (1996)

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ONLINE: EPODOC, WPI, PAJ, INTERNET

(54) Abstract Title
Location based internet search engine

(57) A method for searching the internet comprises displaying a map 30 representing an area, selecting a desired location from the map, providing a database of internet sites linked to said location and searching said database with keywords 50 for sites located within a specified distance of the desired location. The map may be provided as a graphical user interface on a computer. The locations may be identified by a code such as global positioning satellite coordinates. The database may include other data about the site to narrow the search such as nature of goods or services. The sites may be ranked according to distance. Different scale maps may be used. A method of compiling a database is also disclosed comprising obtaining the site address and associating it with a location by selecting the location on a map 40.

FIG.3.
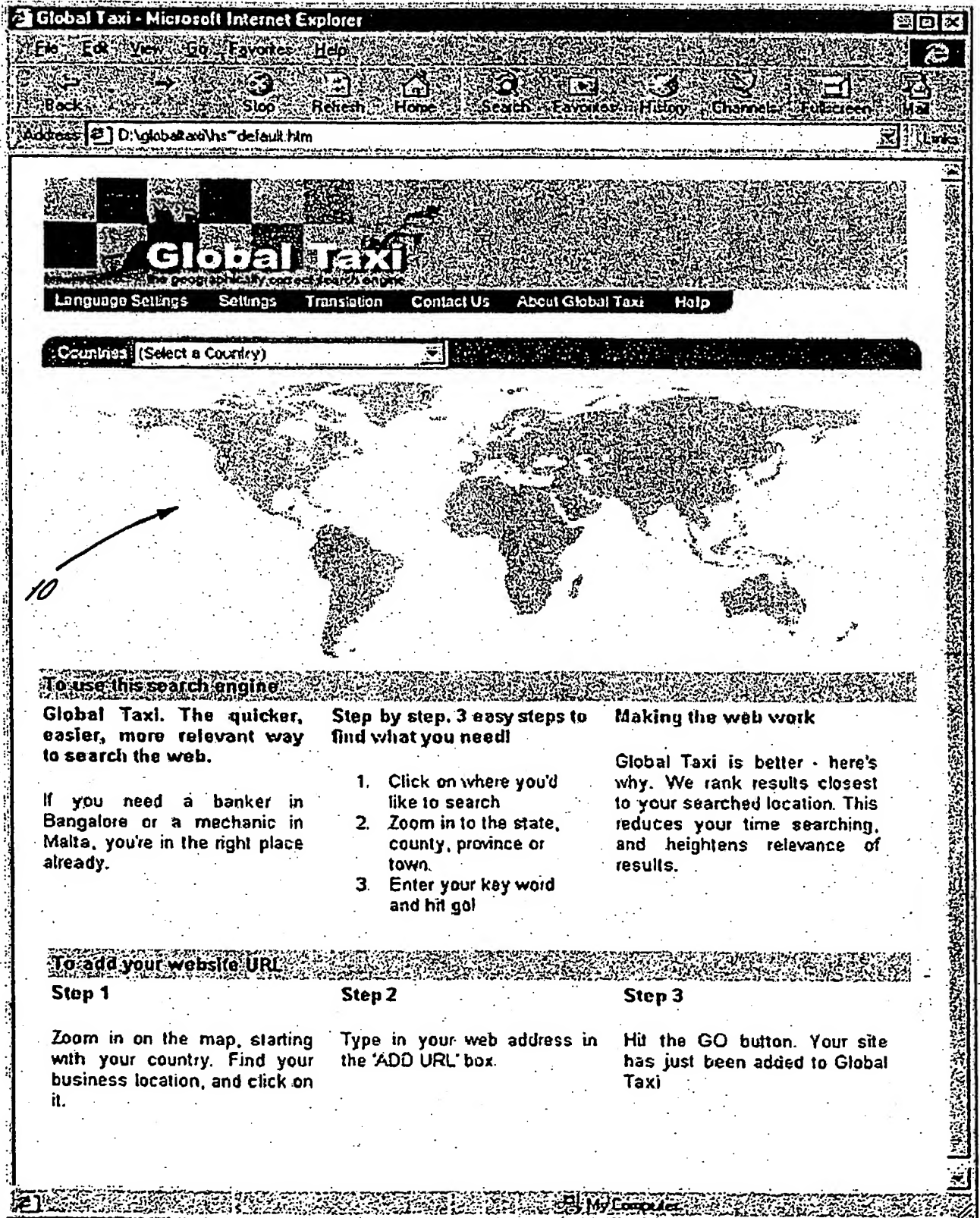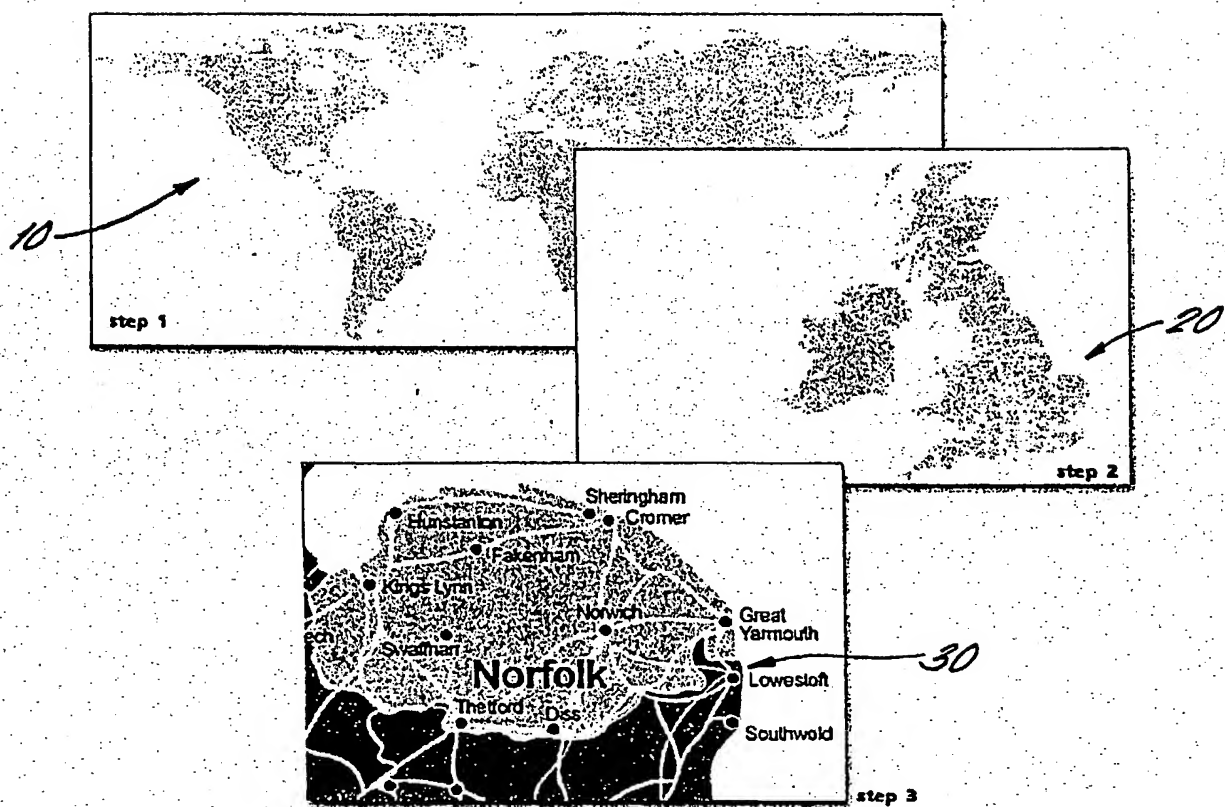
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FIG. 1.   115

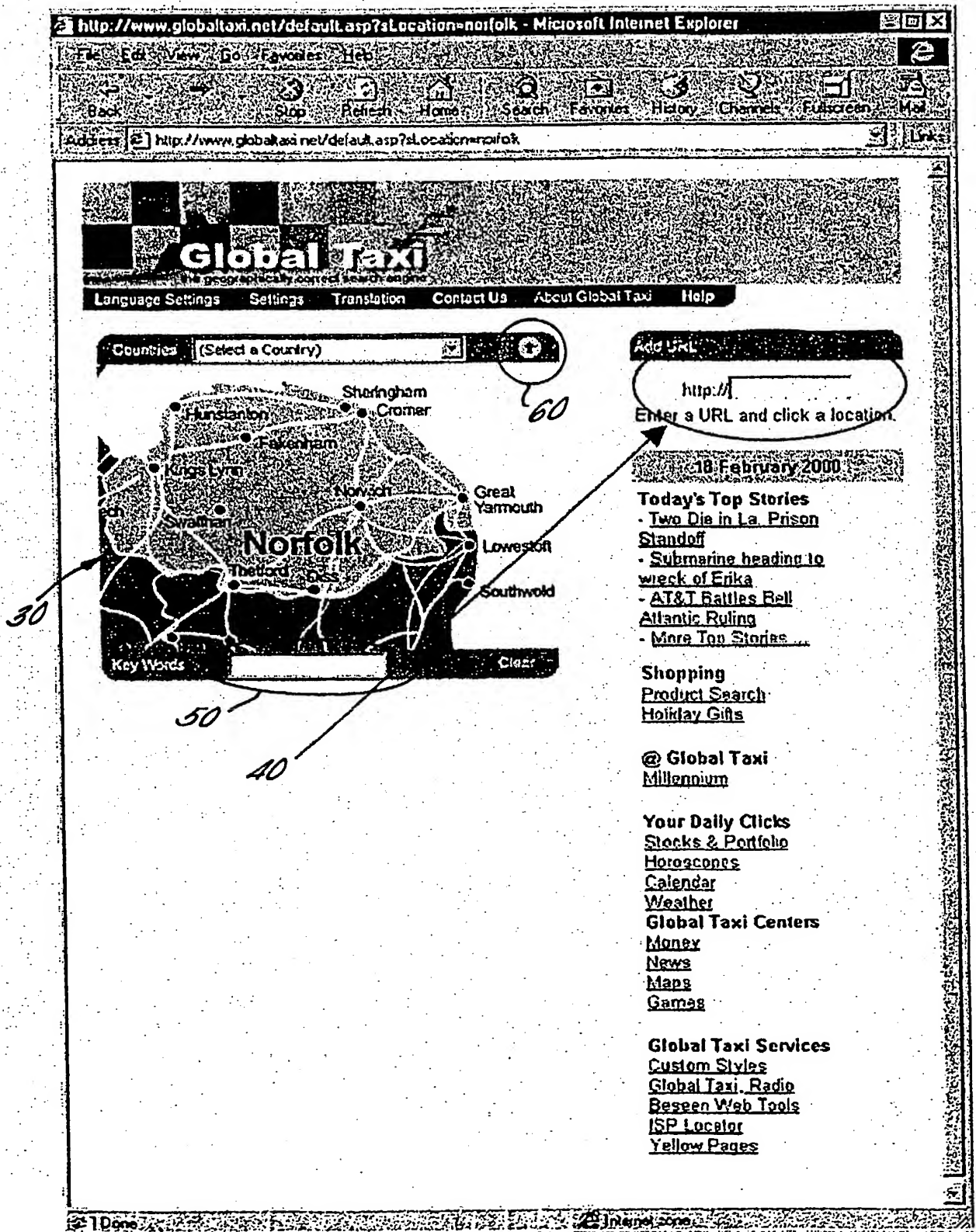**Global Taxi - Microsoft Internet Explorer**

File   Edit   View   Go   Favorites   Help

Back   Stop   Refresh   Home   Search   Favorites   History   Channels   Fullscreen   Mail

Address   D:\globaltaxi\hs~default.htm   Links

Global Taxi
the geographically correct search engine

Language Settings   Settings   Translation   Contact Us   About Global Taxi   Help

Countries   (Select a Country)

10

To use this search engine

Global Taxi. The quicker, easier, more relevant way to search the web.

If you need a banker in Bangalore or a mechanic in Malta, you're in the right place already.

Step by step. 3 easy steps to find what you need!

1. Click on where you'd like to search
2. Zoom in to the state, county, province or town.
3. Enter your key word and hit go!

Making the web work

Global Taxi is better - here's why. We rank results closest to your searched location. This reduces your time searching, and heightens relevance of results.

To add your website URL

Step 1

Zoom in on the map, starting with your country. Find your business location, and click on it.

Step 2

Type in your web address in the 'ADD URL' box.

Step 3

Hit the GO button. Your site has just been added to Global Taxi

My Computer

FIG. 2.

step 1

10

step 2

20

Sheringham
Hunstanton   Cromer
        Fakenham
King's Lynn
            Norwich   Great
                          Yarmouth
    Swaffham
        Norfolk   Lowestoft
        Thetford   Diss
                          Southwold
                                    step 3

30

FIG.3.   3/5

http://www.globaltaxi.net/default.asp?sLocation=norfolk - Microsoft Internet Explorer

File   Edit   View   Go   Favorites   Help

Back   Stop   Refresh   Home   Search   Favorites   History   Channels   Fullscreen   Mail

Address http://www.globaltaxi.net/default.asp?sLocation=norfolk   Links

Global Taxi

Language Settings   Settings   Translation   Contact Us   About Global Taxi   Help

Countries   (Select a Country)   +   Add URL

                                                  http://
                                        Enter a URL and click a location.

Sheringham
Hunstanton   Cromer
          Fakenham
Kings Lynn
              Norwich   Great
                           Yarmouth
Swaffham
        Norfolk   Lowestoft
      Thetford Diss
                           Southwold

Key Words [   ]   Clear

30   50   40   60

18 February 2000

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- AT&T Battles Bell Atlantic Ruling
- More Top Stories ....

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Stocks & Portfolio
Horoscopes
Calendar
Weather
Global Taxi Centers
Money
News
Maps
Games

Global Taxi Services
Custom Styles
Global Taxi, Radio
Beseen Web Tools
ISP Locator
Yellow Pages

Done   Internet zone

FIG. 4.

90

70

80

100

110

120

CLIENT
INTERFACE
(WEB
SERVER)

130

INTERNET

SQL

140

160
GPS
①

150
WWW
①

160'
GPS
②

150'
WWW
②

160''
GPS
③

150''
WWW
③

FIG. 5a.

Column	Type	Length	Description
Lon	Number	Long	Site longitude
Lat	Number	Long	Site latitude
URL	Text	100	Site URL
Description	Memo	65,536	Description of site
Title	Text	255	Site title
Keyword1	Text	20	Keywords describing site
Keyword2	Text	20	
Keyword3	Text	20	
Keyword4	Text	20	
Keyword5	Text	20	
Keyword6	Text	20	
ID	AutoNumber	Long	Record ID

FIG. 5b.

Column	Type	Length	Description
Filename	Text	10	Name of map file excluding the .gif extension. Maps are located in the images folder
ImageMap	Memo	65,536	Client side image map <AREA> definitions for the map
Scale	Number	Integer	Indicates map scale. Used to decide when the Add URL box is displayed
ID	AutoNumber	Long	Record ID

INTERNET SEARCH ENGINE

This invention relates to a method of searching for an Internet site associated with an individual or organization, and to a method of compiling a database for such searching. The invention also relates to a system for carrying out these methods.

With the advent of the Internet for commercial and private use, a number of so-called search engines have been developed. The most well known of these, such as Yahoo! and Lycos, comprise a hypertext markup language ("HTML") document accessible remotely via the Internet. The Uniform Resource Locator (URL) of various other Internet sites are held in a database maintained by the search engine, and a remote user is able to search through the database by entering keywords.

Search engine databases for the Internet, as well intranets and extranets, are typically constructed by an automatic process in which a small piece of software, generally known as a spider, crawler or robot is sent to follow the Domain Naming System (DNS) routing paths, looking for HTML documents. Embedded in the head of each successfully "spidered" document is some special code known as Meta Tags. These Tags are defined by the Worldwide Web Consortium and typically include a description of the website, and/or keywords to help the search engine define the content of the Internet site. The following text defines, using HTML code, the header part of a Web page. The HTML code in particular defines how the page is to be displayed in a browser, but also provides other information:

```
<HEAD>
      <TITLE>MG Mecca.</TITLE>
      <meta name="decription" content="MG Mecca. A premier resource for
classic car restoration, servicing, spares and repairs">
      <meta name="keywords" content="MG, MGA, MGB, MGC, MGBGT, MGCGT,
Midget, Jaguar, Austin Healey, Healey, Frogeye, Sprite, Sebring, Classic Cars,
Collectors cars Car repairs, car servicing, car restoration,MG Mecca, East Anglia,
England">
</HEAD>
```

In this example, the meta name "description" allows the web
site owners to add a descriptive passage that summarizes the
nature of their business, service or web site, in this case
"A premier resource for classic car restoration" etc.

The "keywords" tag allows the search engine to allocate and
retain single or multiple words, which the search engine
recognizes as connected with this site. Here, for example,
somebody searching for a specialist in Austin-Healey cars
would find the site with the keywords Healey, Austin, Austin
Healey and car.

The example above demonstrates what a typical
search engine will automatically search for - site
content, a natural language description of the site, and
a guide to audience suitability.

Most search engines allow companies or individuals
to add their website to the search engine database
manually, rather than waiting for the website to be
"spidered" which may take several months. Some search
engines, such as Yahoo! use the Meta Tag system, with an
additional manual process which allows the choice of
category. These categories are typically non-specific,
however.

Often, it may be desirable to try and locate a
business or individual offering goods and/or services in
a particular geographical location. The problem with

existing search engines is that the ability to restrict the search according to geography is limited by the selection of the keywords in the heading to an HTML document which has been added to the search engine database. Most such pages contain no reference at all to the physical location of the business or individual which owns and/or maintains the Internet site. Even if such information is included, the results of a search will often result in many irrelevant Internet sites being located. For example, using the keyword "Birmingham" will locate Internet sites in the search engine database in Birmingham, England and Birmingham, Alabama in the United States. Of course, even this requires the word "Birmingham" to be present in the keywords of an HTML document on the search engine database.

One solution to the above problems has proposed the use of a postcode or zipcode search. This technique increases the size of the database by requiring the additional information to be included. With the dramatic expansion of the Internet, search engine databases (which by definition aim to include every possible subject) are already extremely large. The size of the databases can cause problems in management and downloading time. More importantly, in order to search via postal code or zipcode, the user needs to have prior knowledge of this information when attempting a search. More often than not, this information is simply not known to him.

It is an object of the present invention to alleviate these problems with the prior art.

According to a first aspect of the present invention, there is provided a method of searching for an Internet site associated with an individual or organization, comprising the steps of: displaying a map representing a plurality of geographical locations; selecting a desired geographical location from the map;

providing a database of a plurality of Internet sites, each site being linked to the geographical location of the individual or organization with which the Internet site is associated; and searching the database according to the said desired geographical location, to identify those of the plurality of Internet sites which relate to individuals or organizations within a predetermined distance of the said desired geographical location which has been selected.

The database which permits such searching is specifically aimed at allowing the user to search for an individual or organization according to their geographical location. This is achieved by providing a map which allows a user to select, visually, the location he is interested in.

Preferably, the map is displayed on a graphical user interface (GUI) of a computer. The map may be in vector format, so that a wide geographical area may initially be displayed, (e.g. the world or a continent) with successive inputs to the computer (for example, via a mouse and cursor) allowing maps showing successively smaller geographical areas to be displayed.

Preferably, the URL of a plurality of Internet sites are stored in the database and are linked in a one-to-one relationship with a corresponding unique code that identifies the geographical location of the associated individual or organization. Most preferably, the unique code is a GPS coordinate, which is a numerical representation of latitude and longitude and identifies the location of any building, for example, uniquely.

In addition to permitting searches by geographical location, the method preferably permits further restriction of the search by keyword as well. For example, the database may hold information not only on the geographical location of an individual or organization having an Internet site, but also the

nature of the goods and/or services being offered. Thus, for example, a user may search for a Mexican restaurant in London by using the keywords "restaurant" and "Mexican" together with a selection of London (or a part

5   of London) from the displayed map.

It is particularly preferable that the results of the database search are ranked in order of the proximity of the geographical location of the individual or organization with which the Internet site is linked,

10   with respect to the desired geographical location. The results of the search may also be ranked in order of closeness of match of the keyword inserted by a user to the keywords stored in the database.

In a second aspect of the present invention, there

15   is provided a method of compiling a database to permit searching for an Internet site associated with an individual or organization, comprising: (a) obtaining a Uniform Resource Locator (URL) identifying an Internet site; (b) displaying a first map representing a

20   plurality of geographical locations; (c) selecting, from the first map, the particular geographical location of an individual or organization with which that Internet site is associated; and (d) linking the selected geographical location of the individual or organization

25   with the URL of the Internet site with which it is associated.

Using the above method to build up the database avoids the need for a user to know anything about HTML programming. In the preferred embodiment, someone

30   wishing to add their Internet site to a database is provided with a screen which allows input of the URL of the site to be added, and also a map. Once the URL has been added, the user simply clicks on the location, on the map, of his business and the database links the two

35   using these GPS coordinates of the location on the map selected.

The invention also extends to a computer program

product comprising a computer program code which, when loaded, causes a computer to execute the above methods.

In yet a further aspect of the present invention, there is provided a system comprising: a computer having a graphical user interface (GUI) for displaying a map representing a plurality of geographical locations; data entry means in communication with the computer to allow selection of a desired geographical location from the displayed map; and a database, also in communication with the computer, the database containing the Internet address of a plurality of Internet sites, each site being linked through the database to the geographical location of an individual or organization associated with the said Internet site, the system being configured such that, when a user selects a desired geographical location from the map, the database may be searched according to that desired geographical location to identify those of the plurality of Internet sites which relate to individuals or organizations within a predetermined distance of the said desired geographical location which has been selected.

The invention may be put into practice in a number of ways, and one embodiment will now be described by way of example only and with reference to the accompanying drawings in which:

Figure 1 shows a first worldwide web page including a large scale map, the page acting as a user interface for a database search engine;

Figure 2 shows a series of different scale maps accessible from the page of Figure 1;

Figure 3 shows a second worldwide web page accessible from the first page of Figure 1, and also acting as a user interface for a search engine;

Figure 4 shows a schematic diagram of a system embodying the invention; and

Figures 5a and 5b show the general structure of tables stored in the database shown in Figure 4.

Figure 1 shows a first worldwide web (WWW) page which is (in the preferred embodiment) an Active Server Page (ASP) and acts as a user interface for a search engine. Typically, at present, this would be displayed on the monitor of a computer connected to the Internet, as will be explained below in connection with Figure 4.

The page includes a first map 10. The map is generated as a vector image, in a manner which will be well known to those skilled in the art.

The page of Figure 1 allows access to further WWW pages, both to allow addition to a database, and to search that database. The method for adding to the database will first be described, in relation to the addition of a fictitious company physically based in Norwich, U.K. and having a URL http://www.anycompany.co.uk.

Starting from the first map 10 in Figure 1, which shows the whole world, a user first identifies the country in which he or his company offers goods and/or services. The user then positions a cursor over that country and clicks on it with a mouse. This action causes a smaller scale map to be displayed upon the screen. As seen in Figure 2, the smaller scale map is a map 20 of the British Isles.

Next, the user identifies that part of the British Isles in which he or his company is based. Again, the cursor is moved over that part of the map and the mouse is clicked once more. This causes a yet smaller scale map to be displayed. As shown in Figure 2, the yet smaller scale map 30 covers Norfolk and part of Suffolk.

For towns and small cities such as Norwich, the scale shown in the map 30 is usually adequate to identify the geographical location of an individual or organization. For larger cities, however, it may be desirable to allow yet a further zoom in to permit different districts of the city to be displayed.

Once the screen displays to the user a map of

suitable scale, the address (URL) of a website associated with the user or his business may be added to the database. As shown in Figure 3, a part of the screen 40 allows for the URL of the website (in this case, one would enter http://www.anycompany.co.uk) to be entered. Once the URL has been entered, the database is updated by clicking on the geographical location within the map 30, here Norwich, where the business who operates www.anycompany.co.uk is based.

As will be explained in connection with Figure 4, the vector image links a position on the screen with a global positioning satellite (GPS) coordinate. Thus, the database stores both the URL and the GPS coordinate (which is unique for a given location) with a link between the two. Indeed, keywords can also be added to the database to help narrow the search by keyword as well as geographical location, as shown in Figure 5 below.

It will be appreciated, of course, that a user can update the database with information (both website URL and geographical location) for third parties - for example in respect of restaurants he might have visited abroad.

The procedure for carrying out a search of the database is similar. In the present example, it is proposed that a user may wish to find a Thai restaurant in Norwich, U.K. The user first clicks upon the map 10 of Figure 1, in the vicinity of the United Kingdom. This generates the map 20 of Figure 2. As before, the user then clicks upon the County of Norfolk, on the East Coast of the British Isles and the map 30 of Figures 2 and 3 is displayed.

Next, the user inserts one or more keywords into the text box 50 on the screen, as shown in Figure 3. In the present example, the user might employ the keywords "Thai" and "restaurant". The user then clicks upon the button 60 which causes the database to be searched for

all websites within the area displayed upon the map 30 and which include keywords "Thai" and "restaurant".

If the results of the search are too numerous, or too few, to be of value to the user, the area to be searched may be redefined by enlarging or reducing the map scale as appropriate. For example, if several tens of Thai restaurants in Norfolk are located during the search, the user may wish to narrow the search to Norwich alone.

As a refinement, the search engine may return the results in order of (a) proximity to the location which the user is interested in, and (b) closeness of match between the keywords inserted and the keywords in the various websites held on the database.

Having described the general principles of adding to and searching the database, a description of one way of implementing this will now be described in connection with Figure 4. It will be appreciated that the following description is merely a preferred implementation of a procedure which might be carried out in many different ways according to the potential size of database, likely manner of access and so forth.

In the present example, the user interface is a personal computer 70 comprising a CPU 80, connected to a graphical user interface or monitor 90. A keyboard 100 and mouse 110 are also attached to the CPU 80.

The CPU 80 is loaded with a standard thin client browser such as Microsoft Internet Explorer (TM) 4, or Netscape Navigator (TM). The personal computer 70 is capable of connecting via the Internet to a web server 120, which acts as a client interface between the search engine database and the remote personal computer 70. The web server 120 includes a search engine request router.

The web server 120 communicates with a database server 130, such as the SQL 7.0 database. Preferably, the database server 130 employs Microsoft Windows NT (TM).

Upon connection of the remote personal computer 70 to the web server 120, a web page is downloaded in a manner which will be familiar to those skilled in the art. Preferably, the web page to be downloaded is an Active Server Page, which contains programming code written in VB Script or Jscript. However, CGI Scripts could also be used if desirable.

The database server 130 includes a Microsoft Access 2000 database 140 to store a plurality of URLs 150, 150', 150", and to store corresponding GPS data 160, 160', 160" relating to the geographical location of the individual or organization associated with that website URL. Two tables are employed; Figure 5a shows the table of website data and GPS data, indicating the various pieces of information that are stored. Figure 5b shows the table which allows the various maps 10, 20, 30 to be generated.

Longitudes and latitudes are entered into the site data table using an integer value to represent the geographical value. For example, 90°N is entered as 9000Lon. 2.01°E is entered as 201Lat. Likewise, 30.45°W is represented as -3045Lat. In this way, any location on the planet can be uniquely identified in the database.

Map graphics are stored in GIF format. The file name stored in the map store table of Figure 5b should be ten or less characters excluding the .gif extension. The scale column in the map store table of Figure 5b is either one or zero, depending upon the level of detail of the map. The ImageMap in the table of Figure 5b refers to the client side image map. Each <AREA> hotspot definition refers to a particular map. When a hotspot is clicked, a Javascript function is called from within the HREF attribute. For example:

```
<AREA   href   =   "javascript:   BuildTarget
('norfolk',   'norfolk',   102,   103,   5262,
5263)"...>
```

The BuildTarget function controls what happens when the user clicks the displayed map. The resulting actions are to search for a website in the area clicked, zoom in on the area clicked, or to submit a website in the area clicked. The arguments used by BuildTarget are described in the table below:

TABLE

Argument	Description
Soriginal	The present map file name
Starget	The file name of the map to zoom into when clicked
IminLat	Maximum and Minimum GPS coordinates -
ImaxLat	the website to be located is constrained
IminLon	to search within those limits. On submitting a website, IminLat and IminLon
ImaxLon	are used.

It is to be appreciated that the foregoing has described a specific embodiment representing the currently preferred implementation. However, those skilled in the art will appreciate that various modifications and improvements may be made. For example, although a personal computer has been described to access the database via the Internet, it will be appreciated that any equipment capable of displaying a map and able to access a database could be employed to carry out the techniques described herein. For example, mobile telephones, I-points, held-held GPS equipment, televisions, games consoles and the like now allow access to the Internet and have graphical capabilities. The new generation of Wireless Application Protocol (WAP)-enabled mobile telephones could also access the database without necessarily requiring an Internet Protocol (IP) connection. Therefore, the scope of the

invention is to be determined solely by the accompanying claims.

CLAIMS:

1. A method of searching for an Internet site associated with an individual or organization, comprising the steps of:

displaying a map representing a plurality of geographical locations;

selecting a desired geographical location from the map;

providing a database of a plurality of Internet sites, each site being linked to the geographical location of the individual or organization with which the Internet site is associated; and

searching the database according to the said desired geographical location, to identify those of the plurality of Internet sites which relate to individuals or organizations within a predetermined distance of the said desired geographical location which has been selected.

2. The method of claim 1, in which the map is displayed on a graphical user interface (GUI) of a computer, the step of selecting comprising aligning a movable cursor on the GUI with a desired geographical location on the displayed map, and sending a signal to the computer to confirm selection when the cursor is aligned with the desired geographical location.

3. The method of claim 1 or claim 2, in which each of the plurality of geographical locations displayed on the map is associated with a corresponding unique identifying code.

4. The method of claim 3, in which the unique identifying code is a Global Positioning Satellite (GPS) co-ordinate, representative of the latitude and longitude of the corresponding geographical location.

5.   The method of any one of the preceding claims, in which the database is further arranged to store additional information pertaining to a particular individual or organization, the method further comprising:

searching the database according to at least one further criterion chosen from the additional information stored on the database, in order to permit a narrowing of the search.

6.   The method of claim 5, in which the database is further arranged to store information pertaining to the nature of the goods and/or services offered by the said particular individual or organization,

the method comprising searching the database according to a user selected choice of the particular goods or services of interest at a chosen geographical location.

7.   The method of any preceding claim, further comprising:

ranking the results of the database search in order of the proximity of the geographical location of the individual or organization with which the Internet site is linked, with respect to the desired geographical location.

8.   The method of any preceding claim, in which the said predetermined distance may be altered so as to generate a list of Internet sites whose total number exceeds a predetermined minimum but is less than a predetermined maximum.

9.   The method of any preceding claim, further comprising:

displaying a first map showing a first geographical area;

selecting a desired geographical region from the said first geographical area; and

displaying a second map showing a second geographical area which is smaller than the said first
5 geographical area, the said desired geographical location being selected from the said second map.

10. A method of compiling a database to permit searching for an Internet site associated with an
10 individual or organization, comprising:

(a) obtaining a Uniform Resource Locator (URL) identifying an Internet site;

(b) displaying a first map representing a plurality of geographical locations;

15 (c) selecting, from the first map, the particular geographical location of an individual or organization with which that Internet site is associated; and

(d) linking the selected geographical location of
20 the individual or organization with the URL of the Internet site with which it is associated.

11. The method of claim 10, further comprising:
25 repeating steps (a) to (d) for a plurality of individuals or organizations, to build up a database comprising a plurality of URLs linked to the geographical location of their associated individuals or organizations.
30

12. The method of claim 11, further comprising: displaying a second map representing a plurality of geographical locations;

selecting a desired geographical location from the
35 second map, the desired geographical location being representative of a geographical location in the vicinity of which it is desired to locate an individual

or organization; and

searching the database according to the desired geographical location, to identify those of the plurality of URLs which relate to individuals or organizations within a predetermined distance of the said desired geographical location which has been selected.

13. The method of claim 10, claim 11 or claim 12, in which each of the plurality of geographical locations displayed on the first map is associated with a corresponding unique identifying code.

14. The method of claim 13, in which the unique identifying code is a Global Positioning Satellite (GPS) co-ordinate, representative of the latitude and longitude of the corresponding geographical location.

15. The method of claim 12, in which each of the plurality of geographical locations displayed on the second map is associated with a corresponding unique identifying code.

16. The method of any one of claims 11 to 15, further comprising, for each of the plurality of URLs:
obtaining additional information pertaining to a particular individual or organization; and
linking the said additional information to the said geographical location of the particular individual or organization;
whereby the database may be searched for an Internet site according to both the desired geographical location and the said additional information.

17. The method of claim 16, in which the step of obtaining additional information comprises:
obtaining additional information pertaining to the

nature of the goods and/or services offered by the said particular individual or organization,

whereby the database may be searched for an Internet site according to the desired geographical location and also according to particular desired goods and/or services.

18. A computer program product comprising computer program code which, when loaded, causes a computer to execute the method of any one of the preceding claims.

19. A system comprising:

a computer having a graphical user interface (GUI) for displaying a map representing a plurality of geographical locations;

data entry means in communication with the computer to allow selection of a desired geographical location from the displayed map; and

a database, also in communication with the computer, the database containing the Internet address of a plurality of Internet sites, each site being linked through the database to the geographical location of an individual or organization associated with the said Internet site,

the system being configured such that, when a user selects a desired geographical location from the map, the database may be searched according to that desired geographical location to identify those of the plurality of Internet sites which relate to individuals or organizations within a predetermined distance of the said desired geographical location which has been selected.

20. The system of claim 19, in which the database is arranged to link the Internet address of a particular Internet site with the GPS co-ordinates of the individual or organization with which it is associated.

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:
UK Cl (Ed.S): G4A (AUDB)
Int Cl (Ed.7): G06F17/30, 17/60
Other: Online: EPODOC, WPI, PAJ, Internet

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X, E	EP 1045345 A1	(IDC) See especially page 2 line 16 to page 3 line 58	1-9,18, 19,20
X, E	WO 01/65410 A2	(GEO INSIGHT) See especially page 6 line 15 to page 14 line 2	1-9,18, 19,20
X, E	WO 00/41090 A1	(MICRO-INTEGRATION) See especially page 1 line 22 to page 25 line 13	1-9,18, 19,20
X Y	US 5032989 A	(TORNETTA) See especially column 1 line 33 column 2 line 45	X: 1-9,18, 19,20 Y: 10-17
Y	http://uk.yell.com/yell/searchtp.html see especially - how to use Yell.com search (1996)		Y: 10-17